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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/554,041	10/12/2000	Martin Lenfers	10191/1376	5483

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EXAMINER

OLSEN, KAJ K

ART UNIT	PAPER NUMBER
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1744

DATE MAILED: 07/02/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

MF-10

Office Action Summary	Application No.	Applicant(s)	
	09/554,041	LENFERS ET AL.	
	Examiner	Art Unit	
	Kaj Olsen	1744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims 6-12 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.
2. The claims are drawn to a probe for determining an oxygen concentration in a gas mixture. In particular, the claims call for a "loaded voltage divider including a plurality of resistors that are arranged such that a negative feedback of a Nernst voltage circuit and of a pump voltage circuit is optimized" (claim 6). The term "negative feedback" as it is conventional understood implies that the output of an amplification stage is fed back into an input of said amplification stage in such a manner that the overall gain of the amplification stage is reduced (see enclosed discussion in Diefenderfer). However, all the applicant has shown in the specification is a configuration of resistors that connect the inner pumping electrode to the Nernst electrode and does not appear to have described anything about the Nernst voltage or pump voltage circuitry which apparently utilizes this configuration to achieve negative feedback. What constitutes the amplification inputs and outputs and how does this configuration of resistors optimize this feedback? Furthermore, what constitutes an "optimized" or "maximized" feedback for the Nernst voltage circuit or pump voltage circuit? The specification is not

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enabling to one possessing ordinary skill in the art concerning these issues. The above quoted passage also sets forth a "loaded voltage divider". Because the specification has not described how the Nernst or pump voltage circuits operate, it is unclear how this circuit constitutes a "loaded" divider. The term "loaded" implies some voltage being applied across a series of resistors from which a *divided* voltage can be picked off of any individual resistors in the series. Because the location of the voltage sources are not set forth in the specification, the specification is not enabling to one possessing ordinary skill in the art about how these elements of the instant invention constitutes a loaded voltage divider. Consequently, one of ordinary skill in the art at the time the invention was being made would not be enabled to make and use the instant invention.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 6-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. In claim 6, the limitations drawn to the "joint supply conductor" are confusing and unclear. For example, the limitations specify that the Nernst electrode and inner pump electrode are connected "at least in some sections". This limitation is vague and the metes and bound of it are unclear.

6. Moreover, claim 6 further recites the presence of a loaded voltage divider including "a plurality of resistors". This limitation would appear to refer to the combination of resistors R1, R2, and R3 of the figures that apparently constitute the elements of the loaded voltage divider

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(see 112 1st rejection above). However, if these resistors are set forth as the “plurality of resistors”, then what would constitute the “joint supply conductor resistor” which is claimed as a separate element from the plurality of resistors. Furthermore, is the plurality of resistors and/or the joint supply conductor resistor part of the separately specified “circuit arrangement”?

Clarification is requested.

7. Finally, the limitations drawn to the joint supply conductor are unclear because the cooperation between the various components of the joint supply conductor and the Nernst and pump electrode are not clearly established. The limitations appear to specify a plurality of resistors that are vaguely associated with the Nernst and pump electrodes to arrive at an optimized negative feedback.

8. In claims 6 and 7, it is unclear what constitutes an “optimized” or “maximized” feedback. In addition, wouldn’t a “maximized” feedback (β in Diefenderfer eq. 7-14 approaching negative infinity) result in complete destruction of the signal?

9. In claim 10, it is unclear what the metes and bound of the “minimized” cross section of the conductor section is. The term “minimized” is not defined by the claims and the specification does not provide a standard for ascertaining the requisite degree of the term. One of ordinary skill in the art would not be reasonably apprised of the scope of the invention. In addition, it is unclear if the applicant even teaches a minimized cross section. First, the specification doesn’t appear to teach minimizing the cross section, but rather only teaches reducing it (p. 3, lines 22-23 and p. 7, line 12). Second, it would appear to the examiner that the applicant has not utilize a “minimized” cross section because technology exists which is capable of making conductive filaments of extremely small cross sections, and consequently, extremely

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high resistances (e.g. filaments typically utilized in ultramicroelectrodes). There is no indication in the specification that the applicant utilizes any of this technology in the instant invention and hence wouldn't appear to constitute a *minimum* cross section.

10. In claim 11, it is unclear how the specified printed conductor sections and contact point cooperate with the other specified elements of the invention (e.g. the plurality of resistors).

11. In claim 12, it is unclear what constitutes being "downstream" from the Nernst and inner pump electrodes. Furthermore, it is unclear what constitutes being "directly" downstream from said electrodes.

12. In claim 12, it is entirely unclear what the last limitation is referring to. The applicant has not sufficiently define what a "second distance" of the joint supply conductor section even is. Furthermore, it is unclear what the language drawn to a conductor section having a "maximum length" means. The term "maximized" is not defined by the claims and the specification does not provide a standard for ascertaining the requisite degree of the term. One of ordinary skill in the art would not be reasonably apprised of the scope of the invention. In addition, it is unclear if the applicant even teaches a maximum length. First, the specification doesn't appear to teach maximizing the length, but rather only teaches increasing it (p. 3, line 31 and p. 7, line 6). Second, it would appear to the examiner that the applicant has not utilize a "maximized" length because any length longer than what the applicant utilized would constitute a length more "maximized" than what was utilized. Clarification is requested.

Response to Arguments

13. Applicant's arguments filed 3-15-2002 have been fully considered but they are not persuasive. With respect to the examiner's rejection over 112 first paragraph, applicant urges that the rejection be withdrawn. In particular, applicant explains that the examiner's interpretation of the term "negative feedback" is correct, and explains how the applicant optimizes the feedback. However, this still does not explain how the specification is enabling with respect to the term negative feedback. Where is the amplification that is a necessary component of "negative feedback"? How are the resistors chosen in order to "optimize" the feedback? What does it even mean to --optimize-- or --maximize-- feedback? Applicant uses terms in the arguments such as "certain minimum pump current" or "upper limit on the negative feedback". What do these terms mean? The examiner still does not believe the specification is enabling for the limitations drawn to the negative feedback because it is unclear what negative feedback has to do with the set forth structure, and one possessing ordinary skill in the art could not construct the invention without undue experimentation.

14. With respect to the 112 first paragraph rejection of the term "loaded voltage divider", applicant urges that loaded voltage divider of the claims is designed to increase the negative feedback without causing the pump current to drop below the minimum pump current required. However, this does not answer the question concerning how the specified structure constitutes a loaded voltage divider. In addition, it is unclear how the specified structure accomplishes the stated objectives of the circuit. How does the circuit increase the negative feedback? What is a minimum pump current? Clarification is requested.

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15. With respect the rejections under 112 second paragraph, the examiner has withdrawn the rejections concerning the diffusion barrier and the term “joint supply conductor resistor”, but has maintained the other 112 rejections. With respect to the rejection of the phrase “at least in some sections”, applicant urges the term should be well-understood. However, the examiner still finds the phrase vague because the applicant has not clearly set forth how the various elements in question (i.e. the two electrodes, the resistor, and the “circuit arrangement”) are cooperating with each other. The claim merely states that the electrodes are connected to a unspecified circuit arrangement in some unspecified manner. Moreover, why is “sections” plural?

16. With respect to the rejections of the limitations drawn to the plurality of resistors, applicant urges that the plurality of resistors of claim 6 read on R1 and R2 and not R1, R2, R3 as suggested by the examiner. The problem with this interpretation is that the loaded voltage divider includes the plurality of resistors, and R1 and R2 by themselves would not appear to read on the term “voltage divider”. As the examiner understands it, a voltage divider requires at least two resistors *in series* (see Diefenderfer, p. 14). Without two resistors in series across a voltage source, there is no voltage to be divided. Hence, R1 and R3 (or R2 and R3) (or R1, R2, and R3) can be construed as being a voltage divider, but not R1 and R2 without R3. R1 and R2 are not in series across a loaded voltage as near as the examiner can ascertain (see first paragraph above) and R1 and R2 would not read on the term “loaded voltage divider”. Because R3 must be interpreted as being part of the voltage divider, applicant is thereby claiming the joint supply conductor resistor twice.

17. Applicant urges that the examiner’s rejection concerning the cooperation between the various components appears to be based on the examiner’s first paragraph rejection. This is

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incorrect. The previous first paragraph rejection concerned how the disclosure supported the applicant's claim language. The rejection about the cooperation concerns how the applicant vaguely specifies in the claim that a number of components are connected together without specifically identifying how the components are connected together. Applicant is vaguely specifying an arrangement of a plurality of resistors to accomplish a vaguely defined function (i.e. optimizing negative feedback). The metes and bounds of the limitation is entirely unclear.

18. Applicant also traverses the examiner's rejection of terms such as "optimized" or "maximized" under 112 second paragraph. Applicant urges that the language utilized clearly indicates the meaning of the terms by suggesting that the feedback is chosen to be as high as possible, without adversely affecting the pump cell. However, the claims do not specify this. They merely state that the negative feedback is "optimized" or "maximized" for an unspecified purpose. The claims do not state that the negative feedback is maximized --without adversely affecting the pump cell--. Absent any qualifier to the terms "maximized", the examiner's interpretation of a maximized feedback (i.e. infinite negative feedback) is believed to be correct. In addition, what would one reasonably construe as being a high enough negative feedback without adversely affecting the pump cell? The specification does not appear to provide any guidance concerning this point. Similarly for the examiner's rejection of claim 10, applicant has not qualified what is meant by "minimized" so the examiner believes this language is similarly indefinite.

19. With respect to the rejection of claim 11, applicant urges that the claims cannot be read in a vacuum, but in light of the specification. However, the mere fact that the language utilized in a claim is described in the specification does not obviate the applicant's obligation in the claims to

clearly and explicitly set forth the elements that comprise the invention and how these elements cooperate to define the invention. In particular, it is unclear if the structure that would apparently read on the terms “printed conductor section” and “contact point” would overlap elements already specified (e.g. the voltage divider circuit).

20. Applicant traverses the rejections of claim 12. With respect to the rejection concerning “downstream” and “directly”, applicant again urges that claims cannot be interpreted in a vacuum, but in light of the specification. Again, the mere fact that the language utilized in a claim is described in the specification does not obviate the applicant’s obligation in the claims to clearly and explicitly set forth the elements that comprise the invention and how these elements cooperate to define the invention. In particular, applicant has not established any sense of direction *in the claims* such that the term “downstream” has any clear meaning.

21. With respect to the term “maximum”, applicant has not qualified what is meant by “maximum” so the examiner believes this language is similarly indefinite as discussed above for claims 6, 7, and 10.

Conclusion

22. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (703) 305-0506. The examiner can normally be reached on Monday through Thursday from 8:30 AM-6:00 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Mr. Robert Warden, can be reached at (703) 308-2920.

When filing a fax in Group 1700, please indicate in the header "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communications with the PTO that are not for entry into the file of this application. This will expedite processing of your papers. The fax number for non-after final communications is (703) 872-9310 and the fax number form after-final communications is (703) 872-9311.

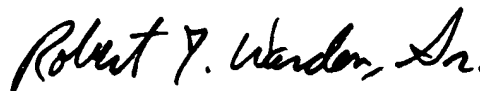
Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0661.

Kaj K. Olsen, Ph.D.



Patent Examiner

AU 1744



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